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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,990	12/10/2003	Kyoo Jin Han	2060-3-89	9407

7590 03/16/2006  
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EXAMINER

IQBAL, KHAWAR

ART UNIT	PAPER NUMBER
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2686

DATE MAILED: 03/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/733,990	<b>Applicant(s)</b> HAN ET AL.	
	<b>Examiner</b> Khawar Iqbal	<b>Art Unit</b> 2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,5-30 are rejected under 35 U.S.C. 102(e) as being unpatentable by Kim et al (20020141349).

3. Regarding **claim 1** Kim et al teaches in a mobile communication system, a method of setting a reverse activity bit, the method comprising (figs. 2-10):

measuring a rise over-thermal noise-measured representing a load degree of a reverse link (para. 0071-0073, 0119-0129); comparing the ROTm with a setup reference value (ROTm\_th) (para. 0071-0073, 0119-0129); setting the RAB to lower data rate of a terminal, when the ROTm is greater than the ROTm\_th (para. 0071-0073, 0119-0129); enabling a base station to receive and monitor a variation state of the ROTm, when the ROTm is less than the ROTm\_th (para. 0071-0073, 0119-0129); and setting the RAB to control the data rate according to the variation state of the ROTm (para. 0071-0073, 0119-0129);

dividing the ROTm into at least two states according to the variation state of the ROTm (para. 0071-0073, 0119-0129); and

setting the RAB to lower the data rate according to one of the at least two states (para. 0071-0073, 0119-0129).

resetting the RAB, when the state of the ROTm is changed after the RAB is set, based on formula:  $RAB\ set\ time = RABSetTimeBystate + RABSetTimeByStateTrans$ , wherein  $RABSetTimeBystate$  is a RAB set time corresponding to the state of the ROTm, and  $RABSetTimeByStateTrans$  is a RAB set time corresponding to the transition degree of the state of the ROTm (para. 0045-0047, 0071-0073, 0119-0129).

Regarding **claim 5** Kim et al teaches updating the RAB set time when the ROTm varies (para. 0071-0073, 0119-0129).

Regarding **claim 6** Kim et al teaches setting the RAB according to a ROTc value calculated based on the load degree of the reverse link and the RAB set time (para. 0071-0073, 0119-0129).

Regarding **claim 7** Kim et al teaches setting the RAB to lower the data rate regardless of the ROTc value, when the RAB set time is greater than a first threshold.

Regarding **claim 8** Kim et al teaches comparing the ROTc to a ROTc\_th threshold for the load degree of the reverse link, when the RAB set time is equal to the first threshold; setting the RAB to lower the data rate, when the ROTc is greater than the ROTc\_th threshold; and setting the RAB to raise the data rate, when the ROTc is smaller than the ROTc\_th threshold (para. 0071-0073, 0119-0129).

Regarding **claim 9** Kim et al teaches setting the RAB to lower transmission data rate of the terminal for a predetermined slot length, when an increment rate of the ROTm calculated according to a variation rate depending on time the ROTm exceeds a

previously set upward reference value (ROT\_Up) (para. 0071-0073, 0119-0129); and maintaining the RAB to raise the transmission data rate, when the increment ratio of the variation rate of the ROTm fails to exceed the upward reference value (ROT\_Up) (para. 0071-0073, 0119-0129).

Regarding **claim 10** Kim et al teaches maintaining the RAB to lower the data rate in case of the ROTm exceeding the reference value (ROTm\_th) until the ROTm drops below the upward reference value (ROT\_Up) (para. 0071-0073, 0119-0129).

Regarding **claim 11** Kim et al teaches generating the RAB to raise the data rate prior to a currently set reverse activity bit, when the measured ROTm fails to exceed the reference value (ROTm\_th) and a decrement rate of the variation rate of the ROTm downwardly exceeds a previously set downward reference value (ROT\_Down) (para. 0071-0073, 0119-0129).

Regarding **claim 12** Kim et al teaches shortening the predetermined slot length as the ROTm gets lower; and increasing the predetermined slot length as the ROTm gets closer to the reference value (ROTm\_th) (para. 0071-0073, 0119-0129).

Regarding **claim 13** Kim et al teaches calculating the predetermined slot length based on following equation:  $\text{predetermined slot length} = a / \text{ROT}(\text{ROTm\_th}[\text{dB}] - \text{ROT\_Measured}[\text{dB}])$ , where the ROT\_measured is a measured ROT value (ROTm), and `a` is a proportional constant related to the predetermined slot length (para. 0071-0073, 0119-0129).

Regarding **claim 14** Kim et al teaches wherein the mobile communication system is a 1xEV-DO system (para. 0071-0073, 0119-0129).

Regarding **claim 15** Kim et al teaches a base station system having a function of setting reverse activity bit (RAB) to control a load amount in a reverse link, comprising: a ROTm measurement unit measuring a ROTm indicating a load degree of the reverse link (para. 0071-0073, 0119-0129); a RAB set time calculation unit dividing the ROTm into at least two states of the ROTm to set up a RAB set time separately according to the states of the ROTm (para. 0071-0073, 0119-0129); a first comparison unit comparing the ROTm to a reference value (ROTm\_th) (para. 0071-0073, 0119-0129); and a RAB generation unit generating a RAB to lower data rate, when the ROTm is greater than the reference value (ROTm\_th) according to a comparison result of the first comparison unit (para. 0071-0073, 0119-0129), the RAB generation unit generating the RAB to lower the data rate for the RAB set time when the RAB set time calculated in the RAB set time calculation unit is greater than a first threshold, and maintaining the RAB to raise the data rate, when the ROTm is smaller than the reference value (ROTm\_th) (para. 0045-0047, 0071-0073, 0119-0129).

Regarding **claim 6** Kim et al teaches wherein the RAB set time calculation unit calculates the RAB set time based on the states of the ROTm and a transition degree of the states of the ROTm (para. 0071-0073, 0119-0129).

Regarding **claim 17** Kim et al teaches a ROTc calculation unit calculating a ROTc based on the load degree of the reverse link; and a second comparison unit comparing the calculated ROTc to a specific threshold (ROTc\_th), wherein the RAB generation unit sets the RAB based on the ROTm and the ROTc (para. 0071-0073, 0119-0129).

Regarding **claim 18** Kim et al teaches wherein after setting up the RAB set time corresponding to the state of the ROTm and the RAB set time corresponding to the transition degree of the state of the ROTm, the RAB set time calculation unit calculates the RAB set time, when the state of the ROTm is changed, based on following equation:  $RAB\ set\ time = RABSetTimeBystate + RABSetTimeByStateTrans$ , where RABSetTimeBystate is the RAB set time corresponding to the state of the ROTm, and RABSetTimeByStateTrans is the RAB set time corresponding to the transition degree of the state of the ROTm (para. 0071-0073, 0119-0129).

Regarding **claim 19** Kim et al teaches wherein the RAB set time is updated when a state transition of the ROTm takes place (para. 0071-0073, 0119-0129).

Regarding **claim 20** Kim et al teaches wherein the RAB generation unit sets the RAB to lower the data rate regardless of the ROTc, when the RAB set time is greater than the first threshold, wherein the RAB generation unit compares the ROTc to ROTc\_th as a threshold of the load degree of the reverse link when the RAB set time is equal to the first threshold and then sets the RAB to lower the data rate when the ROTc is greater than the ROTc\_th, and wherein the RAB generation unit sets the RAB to raise the data rate when the ROTc is smaller greater than the ROTc\_th (para. 0071-0073, 0119-0129).

Regarding **claim 21** Kim et al teaches wherein the RAB set time is decreased when the RAB is set to lower the data rate when the RAB set time is greater than the first threshold (para. 0071-0073, 0119-0129).

Regarding **claim 22** Kim et al teaches wherein the mobile communication system is a 1xEV-DO system (para. 0071-0073, 0119-0129).

Regarding **claim 23** Kim et al teaches in a mobile communication system, a base station system having a function of setting reverse activity bit (RAB) to control a load amount in a reverse link, comprising: a ROT measurement unit measuring ROT<sub>m</sub> as a value of indicating a load degree of the reverse link; a ROT variation rate calculation unit calculating a variation rate of the ROT<sub>m</sub> (para. 0071-0073, 0119-0129); a first comparison unit comparing the ROT<sub>m</sub> measured in the ROT measurement unit to a reference value (ROT<sub>m\_th</sub>) previously set to a level lower than a maximum ROT a base station can receive (para. 0071-0073, 0119-0129); a second comparison unit comparing an increment rate of the variation rate of the ROT calculated from the ROT variation rate calculation unit to a previously set upward reference value (ROT\_Up) (para. 0071-0073, 0119-0129); and a third comparison unit comparing a decrement rate of the variation rate of the ROT calculated from the ROT variation rate calculation unit to a previously set downward reference value (ROT\_Down) (para. 0045-0047, 0071-0073, 0119-0129).

Regarding **claim 24** Kim et al teaches a RAB generation unit generating RAB to lower transmission data rate to terminals in a cell or sector when the ROT<sub>m</sub> exceeds the reference value (ROT<sub>m\_th</sub>), the RAB generation unit generating the RAB to lower data rate for a predetermined slot length when the ROT<sub>m</sub> fails to exceed the reference value and the increment rate of the variation rate of the ROT calculated from the ROT variation rate calculation unit exceeds the ROT\_Up, the RAB generation unit generating the RAB to raise the data rate when the ROT<sub>m</sub> fails to exceed the reference value and

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the increment rate of the variation rate of the ROT calculated from the ROT variation rate calculation unit fails to exceed the ROT\_Up (para. 0071-0073, 0119-0129).

Regarding **claim 25** Kim et al teaches wherein the RAB lowers the data rate, which is generated when the ROT<sub>m</sub> exceeds the reference value (ROT<sub>m\_th</sub>), is maintained each slot until the ROT<sub>m</sub> goes below the reference value (ROT<sub>m\_th</sub>) (para. 0071-0073, 0119-0129).

Regarding **claim 26** Kim et al teaches wherein when the measured ROT fails to exceed the reference value (ROT<sub>m\_th</sub>) and the decrement rate of the variation rate of the ROT downwardly exceeds a previously set downward reference value (ROT\_Down), the RAB is generated to raise the data rate prior to a currently set RAB (para. 0071-0073, 0119-0129).

Regarding **claim 27** Kim et al teaches wherein the predetermined slot length is set shorter as the ROT<sub>m</sub> gets lower (para. 0071-0073, 0119-0129).

Regarding **claim 28** Kim et al teaches wherein the predetermined slot length is set longer as the ROT<sub>m</sub> gets closer to the reference value (ROT<sub>m\_th</sub>) (para. 0071-0073, 0119-0129).

Regarding **claim 29** Kim et al teaches wherein the predetermined slot length is calculated based on following equation:  $\text{slot length} = a / \text{ROT}(\text{ROT}_{m\_th}[\text{dB}] - \text{ROT\_Measured}[\text{dB}])$ , where Slot\_Length is the predetermined slot length, the ROT<sub>measured</sub> is a measured ROT value (ROT<sub>m</sub>), and 'a' is a proportional constant related to slot length (para. 0071-0073, 0119-0129).

Regarding **claim 30** Kim et al teaches wherein the mobile communication system is a 1xEV-DO system (para. 0071-0073, 0119-0129).

***Response to Arguments***

4. Applicant's arguments filed 01-12-05 have been fully considered but they are not persuasive. Examiner has thoroughly reviewed applicant's arguments but firmly believes the cited reference to reasonably and properly meets the claimed limitations. Applicant's argument was regarding claims 1,6,15 and 23. In response, examiner would like to point out that Kim teaches controlling of a transmission rate of a reverse link is performed in more than one state (data rate adjust information e.g., increase states, decrease states or maintain states) and determining at the base station a data rate control command for controlling a transmission data rate of each mobile station. Where the data rate control command indicated whether each mobile station should increase, decrease or maintain its current data transmission rate and adjusting at each mobile station the data transmission rate based the data rate control command and link between the mobile station and base station by using not only the increase and decrease state but also a maintain state for each mobile station individually. After the interference level detector 32 detects the signal interference, the comparator 33 compares the detected level of signal interference with a threshold value in order to estimate the load on the reverse link. The determinator 34 determines a transmission data rate adjust information (e.g., increase, decrease or maintain) based on the reverse link load determined by the comparator 33, and determines a position of each mobile

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based on the rate control bit (RCB) position in the channel slots. The RCB position in the channel slots allows mobiles to be discriminated from one another. The base station uses the MS\_RCV (reverse control value) and MS\_IAB values (the MS\_IAB value is a parameter to provide data rate information for valid data that can be transmitted in the next frame by the mobile. The MS\_IAB value has two states, "increase" and "unchanged," based on the conditions) to generate a rate control bit (RCB) for controlling the data rate of each mobile (S74), and the RCB is transmitted to each mobile (S75). Here, the RCB can include three types of commands; an increase command for increasing the data rate of the mobile, a decrease command for decreasing the data rate, and a command for not changing the data rate. FIG. 8 shows the updating procedure of the BS\_RCV according to the present invention. The base station determines the total interference amount (i.e., ROT) received by the base station in the unit of time having a particular period. The base station then uses the detected ROT value to update the BS\_RCV. If the detected ROT value is below ROT\_TH1, BS\_RCV increases by DELTA<sub>sub.1</sub>, and if the ROT value is below ROT\_TH2, BS\_RCV decreases by DELTA<sub>sub.2</sub>. However, if the ROT is maintained within a range between ROT\_TH1 and ROT\_TH2, the BS\_RCV value is maintained at its previous value. The data rate control information is generated by considering not only the total interference amount received by the base station, but also the signal reception conditions at each mobile. Thus, exclusive or dedicated data rate control for each mobile is possible. Accordingly, improved data transmissions being more appropriate to the channel conditions of each mobile is achieved, and data throughput is significantly

gained. Also, base station management is advantageously improved, as the base station can accurately control the loading on the reverse link (para. 0045-0047, 0071-0073, 0119-0129).

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khawar Iqbal whose telephone number is 571-272-7909.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

*Khawar Iqbal*

  
JOSEPH FEILD  
SUPERVISORY PATENT EXAMINER